

## **REMARKS**

### **I. Claims 9 and 10 – 35 USC §112 Rejection**

Claims 9 and 10 have been amended to depend from Claim 1 – which is a system claim – and not Claim 7. In addition, Claim 10 has been amended to replace the phrase “actual object of the object” with “actual structure of the object”. The phrase “actual structure” is well-supported in the specification – please see the Brief Description of Figs. 5 and 6, and throughout the Detailed Description of the Invention. Applicant thanks the Examiner for drawing attention to these inadvertent errors in Claims 9 and 10.

### **II. Claims 1 to 4 – 35 USC §103 Rejection – Kokaji et al. in view of Shen et al.**

Claim 1 has been amended to further define that the casing walls contained in each single solid element are planar, and also that the interlocks lock the entire planar casing wall of one single solid element to the entire planar casing wall of another single solid element. Claims 2 and 3 have also been amended to be consistent with the Claim 1 language.

This defines over Kokaji and Shen, since neither of these references disclose planar casing walls wherein the interlocks lock the entire planar casing wall of one single solid element to the entire planar casing wall of another single solid element. The casing walls in Kokaji’s Fig. 3 are curvilinear rather than planar, and in fact their curved nature serves an important function in linking one element to another. The casing walls in Kokaji’s Fig. 6 are planar, but only the tips of the element walls are attached to other elements. See also Kokaji, pages 444-445: “A hexagon in the figure denotes a fractum and short bars inside

it show that another fractum connects at the tip of the bars”. Clearly, in Kokaji the entire planar casing wall of one element is not locked to the entire casing wall of another element, as in the amended claims.

Regarding Shen, it also does not disclose planar casing walls that lock to one another as in the claim. Shen’s elements are spherical, and the walls of the elements are thus curved. Shen’s elements lock to each other not by the walls of the element, but rather by coupling members (part numbers 5 in Shen).

There is ample support for this amendment in applicant’s specification. Specifically, Figures 1 to 5 clearly show the planar nature of the casing walls, and Figures 3 to 3 show how the entire planar wall of one single solid element locks to the entire planar wall of another single solid element.

Moreover, Claim 1 has been amended to define that each of the planar casing walls that make up an element has variable magnetic polarisation. This overcomes Kokaji, because Kokaji’s fractum (see page 442, col. 2) only has one piece with variable magnetic polarization – and that is the middle piece. The other two pieces of the fractum (the top and bottom pieces) are permanent magnets, with the N pole on the upper side and the S pole on the lower side. This amendment also overcomes Shen, since Shen does not disclose planar casing walls with variable magnetic polarisation. Since neither Kokaji nor Shen discloses this amended language, no combination of these references would disclose it.

There is also clear support for this amendment in applicant's specification. Specifically, Fig. 1 shows the polarisation of each casing wall independently, and in fact one of the walls has positive polarity whereas the other walls have negative polarity. Fig. 3 shows the locked wall of one solid element having positive polarity, and the locked wall of the other solid element having negative polarity. Fig. 4 shows these solid elements locked together, and the polarity of one casing wall on the left-hand element has changed from negative to positive polarity. Paragraph 0020 of the published application states: "In the active state, the respective walls 6 of the casing of a single element may be polarised with different magnetic poles."

### **III. Claim 7 – 35 USC §103 Rejection – Tanie et al. in view of Kokaji et al.**

The Office Action states (page 6, lines 14-19) that Tanie transmits the successive running number that the real structure of the inactive single multipurpose element being connected represents in the actual object constructed thus far. This is incorrect. The Tanie passage cited in the Office Action as disclosing this is given below, and it simply does not disclose it:

"FIG. 6(a) shows the state wherein all cells of the system are coupled with each other via the adjacent coupling members, with all of their arms retracted. This state is changed to the state of FIG. 6(b) by the following procedures. As shown in the first stage of FIG. 8(a), an address signal of [001] an arm extension/retraction signal of [0000] and a coupling member coupling/uncoupling signal of [0100] are sent from the controller 12 to the system. As a result, the coupling member of the second arm of the cell C.sub.2 is held coupled with the coupling member of the fourth arm of the cell C.sub.6 and the remaining three coupling members of the cell C.sub.2 are uncoupled. Then, signals [002-0000-0100] are sent to the system to hold the coupling member of the second arm of the cell C.sub.3 coupled with the coupling member of the fourth arm of the cell C.sub.7 and uncouple the remaining three coupling members of the cell C.sub.3. Further, signals [000-0000-0100] are sent to the system to hold the

coupling member of the second arm of the cell C.sub.1 coupled with the coupling member of the fourth arm of the cell C.sub.5 and uncouple the remaining three coupling members of the cell C.sub.1. Subsequently, signals [001-0100-0100] are sent to the system. As a result, since the coupling member of the second arm of the cell C.sub.2 is coupled with the coupling member of the fourth arm of the cell C.sub.6, as described above, the second arm of the cell C.sub.2 is extended. Then, signals [005-0001-1111] are sent to the system to hold the four coupling members of the cell C.sub.6 coupled with the corresponding coupling members of the adjacent cells and extend its fourth arm, thereby advancing the cell C.sub.2 by one cell.

Further, signals [003-0000-0100] are sent to the system to hold the coupling member of the second arm of the cell C.sub.4 coupled with the coupling member of the fourth arm of the cell C.sub.8 and uncouple the remaining three coupling members of the cell C.sub.4, then signals [002-0100-0100] are sent to the system to extend the second arm of the cell C.sub.3 with its coupling member coupled with the coupling member of the fourth arm of the cell C.sub.7, and thereafter the signals [006-0001-1111] are sent to the system to hold the four coupling members of the cell C.sub.7 coupled with the corresponding coupling members of the adjacent cells and extend its fourth arm, thereby advancing the cell C.sub.3 by one cell in the same manner as in the case of the cell C.sub.2.

Finally, signals [001-0100-0110] and [002-0100-1100] are sent to the system to couple the coupling member of the third arm of the cell C.sub.2 with the coupling member of the first arm of the cell C.sub.3. Thus, the configuration of the self reconfigurable cellular robotic system shown in FIG. 6(a) can be changed to that shown in FIG. 6(b)."

There is simply no mention, in the above passage, of the transmission of the successive running number that the real structure of the inactive single multipurpose element being connected represents in the actual object constructed thus far.

The Office Action also states (page 6, lines 20-21) that Tanie decides, by an integrated circuit, whether to activate or deactivate the casing walls. This is incorrect. Tanie does not disclose an integrated circuit. The passage cited in the Office Action – which is the same passage cited as disclosing transmission of the successive running number and which is shown above – does not mention an integrated circuit. Tanie only mentions a

“controller”, and certainly, such a controller does not implicitly require an integrated circuit. Said another way, a controller that did not have an integrated circuit could perform the functions described in the cited passage.

The Office Action also states (page 6, lines 20-21) that Tanie discloses activation and deactivation of the casing walls, as in part (c) of Claim 7. This is incorrect. Tanie does not have casing walls, but instead has mechanical coupling arms. Indeed, the Office Action concedes, in the very next paragraph (see page 7, lines 3-9) that Tanie fails to disclose casing walls:

“Tanie et al fails to disclose...wherein said single multipurpose elements have casing walls with variable magnetic polarisation and wherein the reciprocal position of said multipurpose elements is the result of a change in electromagnetic polarisation of said casing walls said change being accomplished by activation or deactivation of said single multipurpose elements in order to establish a means of releasably connecting units”.

Further, the modification proposed in the Office Action – substituting casing walls with variable magnetic polarization for Tanie’s mechanical coupling arms in order to meet Claim 7 – is not obvious, because such a modification would change Tanie’s basic operating principle of mechanical coupling arms. As MPEP 2143.01 states: “If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F. 2d 810, 123 USPQ 349 (CCPA 1959)”.

**IV. Claim 8 – 35 USC §103 Rejection – Kokaji et al. in view of Shen et al. and Murata et al.**

Claim 8 has been amended to define that the light pipes are operatively connected to the integrated circuit in order to carry to the integrated circuit both information on the object and program instructions. This defines over the cited prior art, which shows light pipes that merely carry light to power a solar cell. Moreover, a functional limitation such as this is proper in a claim, as MPEP 2173.05(g) states:

“A functional limitation is an attempt to define something by what it does, rather than by what it is (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971).

A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient or step. In *Innova/Pure Water Inc. v. Safari Water Filtration Sys. Inc.*, 381 F.3d 1111, 1117-20, 72 USPQ2d 1001, 1006-08 (Fed. Cir. 2004), the court noted that the claim term "operatively connected" is "a general descriptive claim term frequently used in patent drafting to reflect a functional relationship between claimed components," that is, the term "means the claimed components must be connected in a way to perform a designated function." "In the absence of modifiers, general descriptive terms are typically construed as having their full meaning." *Id.* at 1118, 72 USPQ2d at 1006. In the patent claim at issue, "subject to any clear and unmistakable disavowal of claim scope, the term 'operatively connected' takes the full breath of its ordinary meaning, i.e., 'said tube [is] operatively connected to said cap' when the tube and cap are arranged in a manner capable of performing the function of filtering." *Id.* at 1120, 72 USPQ2d at 1008.”

**V. The July 6, 2009 Office Action Should Not Have Been Made Final**

The July 6, 2009 Office Action should not have been made final, because in Applicant's response to the previous Office Action dated December 30, 2008, Applicant merely corrected the claims to address various 35 USC § 112 rejections and make the claims clearer and more definite.

MPEP 706.07(a) states that:

“Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p).”

MPEP 706.07(a) further states that:

“A second or any subsequent action on the merits in any application or patent involved in reexamination proceedings should not be made final if it includes a rejection, on prior art not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed.”

(This passage goes on to specifically discuss 35 USC §112 rejections as an area where claim changes should be reasonably expected.)

The December 30, 2008 Office Action did not make any prior art rejections. Instead, it objected to the specification, and rejected the claims only on the basis of 35 USC §112. Applicant merely corrected the specification and claims to make them clearer and more definite. These corrections did not necessitate the new prior art rejections, and Applicant deserves at least one chance to address these prior art rejections, which have been raised for the first time, before facing a Final Office Action.

In view of the above, Applicant respectfully requests that the finality of the present Office Action be withdrawn.

#### **DEPENDENT CLAIMS, GENERALLY**

Claims 2 to 6 and Claims 8 to 10 depend from Claim 1. Claim 1 is patentable over the prior art as discussed above, and thus its dependent claims are patentable as well for the same reasons.

#### **CONCLUSION**

For all the above reasons, Applicant submits that the claims are in proper form, and that the claims all define patentably over the prior art. The application is therefore in condition for allowance, and Applicant requests such action.

Respectfully,

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